THE VETERINARY RECORD

A Weekly Journal for the Profession.

Edited by WILLIAM HUNTING, F.R.C.V.S.

No. 867. FEBRUARY 18, 1905. VOL. XVII

CORONERS AND HORSE-SLAUGHTERERS.

Post-mortem examination more often follows the fatal case in veterinary than in human practice. This is a great advantage to the scientific veterinarian, who is thus enabled to verify his diagnosis and enrich his pathological collections. Sometimes the post-mortem does not verify, it corrects diagnosis. Occasionally mischief occurs by curious owners attending post-mortems, or even making their own by means of the telephone and the horse slaughterer. This is a dangerous and unsatisfactory method, as the knackerman recognises little save "rotten lungs" and "twisted gut," and he is not particular about the identification of carcases. It may sometimes be a waste of time to follow a case to the horse-slaughterers, but it is a safe practice where there is any chance of the owner consulting the knacker. The human practitioner has a decided advantage over us in the ordinary treatment of dead patients. The undertaker is not permitted to make so minute an examination as the knacker, and his opinion as to the cause of death is never asked or given—save in the exceptional instance of the patient not being as dead as certified. It has been truly said of medical practitioners that the sun shines on their successes and the earth covers their failures.

Very seldom is a post-mortem made in human practice outside of a hospital except when the Coroner orders. One would think that a post-mortem under such circumstances would be best performed by a trained pathologist, and by a man who was independent of all parties concerned. The London County Council appointed such an official and coroners have made frequent use of his services. The result has been one long protest from the medical profession, supported by its leading journals, and carried so far as to end in an appeal to the Lord Chancellor. The objection to the "pathologist" surely cannot be the loss of a fee by the local practitioner, and it can hardly be fear of the pathologist's findings. When a Coroner orders a post-mortem one would think that the medical attendant should never be employed unless with the assistance of an outside expert. Men who make a post-mortem examination of a dead animal once in five or six years are simply incapable of giving a proper pathological report of the lesions found, and are not to be trusted to find all the lesions that exist.

The responsibility of the veterinarian is of course much less than that of the human practitioner, but neither is infallible. An examination made by an independent expert ought not to be objectionable to anyone. It may reveal something unexpected, and may not verify a diagnosis, but omniscience should not be claimed by any class. The veterinary practitioner whose client takes the word of a horse-slaughterer on the post-mortem lesions is to be pitied. He is unfairly treated, and may be met with a report of renal calculus (which existed) in a case he treated for pneumonia; or, when careless identification comes in, by a report of "rotten lungs" in a case he suspected of fractured pelvis. The post-mortem which can always be had on the domestic animal is of great advantage when made by an expert, but the practitioner who attended during life should always be present.

TETANUS AND ANTITETANIC SERUM.

Although a great many more cases of tetanus seem to have recovered since serum therapy was first introduced, if the records count for anything, many practitioners appear to be still fixed in their opinion that the antitoxin is of very little if any use whatever.

The writer was very much interested in the discussion following Mr. Snaith's "Notes on Tetanus" at the meeting of the South Durham and North Yorkshire Veterinary Medical Association, and published in *The Veterinary Record* of Dec. 24th last; more particularly, perhaps, because of the prevalence of the disease in this part of the world, and also because my name happened to be mentioned by Harry Peele, Esq., the new President of the Association, in connection with the use of tetanus antitoxin or antitetanic serum.

"Nothing succeeds like success," is a saying with a considerable modicum of truth attached to it; and on account of the success with the serum, which the writer considers he, as well as others in this part of the world have had, I cannot but be favourably impressed with its virtue when used at the proper time and in sufficiently quantity.

It is easy to say that those cases which recover, after the use of the serum, would have done so without its use. But do former records show anything like the number of recoveries, before the introduction of the serum, that have been reported since? I think not. Once in a while a case recovered under the old treatment, and was looked upon as almost a curiosity. But to-day, under the new, some practitioners can claim a succession of recoveries quite unheard of in the past. Of course it is impossible to say definitely that those cases which recover would not do so, irrespective of the serum treatment, as there is no way of accurately determining the point. But when we take a record of a number of recoveries occurring, in some cases consecutively within a few months, so to speak, and in a single practice, and compare such results with what used to obtain before the days of the serum, it is somewhat difficult to doubt the therapeutic value of the antitoxin in some degree at least.

Some few years ago the late Professor Nocard read a paper before the French Academy of Sciences, a translation of which was given, if I am not mistaken, in the *Journal of Comparative Pathology and Therapeutics*, setting forth the prophylactic value of antitetanic serum. If my memory is not at fault, Nocard distributed immunising doses to some twenty-eight or thirty veterinarians in different parts of France, each of whom had had cases of the

disease, more or less in number, in the previous years of their practice. The Professor requested these practitioners to employ the serum as a preventive in castrations, docking, gathered nails, and other operations and accidents in different varieties of animals where tetanus infection might possibly follow, and to report their results to him after a certain length of time. I am writing from memory only, but if I am not very much mistaken the results recorded showed some 300 cases in all where the serum had been used, without a single case of tetanus having developed. My figures may not be absolutely accurate, although I believe they are at least approximate, but the results go to show the great value of this product when used as a preventive or immunising agent. It would certainly be quite a stretch of the imagination I think to believe that all of the cases alluded to would have recovered without the aid of the serum.

There can be no question I think that the chief value of the antitoxin is as a preventive. But I am forced from experience to believe there is little doubt that it has also considerable value as a therapeutic agent in the early stages of tetanus. In the more advanced stages, however, its effect is very unsatisfactory, if not altogether nugatory.

Let us see if we can reason this out a little. In the first place it seems evident that, when employed as a prophylactic, the elaboration of the toxin is prevented. If this is so, might we not rather conclude that the action of the serum here is more bactericidal than antitoxic, or in other words, that it destroys the organisms rather than having a neutralising effect upon the toxin?

As to its therapeutic effect, one writer has said that its action is "negatively-positive rather than positively-negative," by which, presumably, is meant that, under certain conditions, such as early administration etc., it has a more or less positive effect; while in the later stages, its action is positively-negative.

If then the serum prevents the elaboration of toxin, or there is so little of it formed as not to have any appreciable effect on the economy, its value, when given early, seems to be due to this bactericidal property (checking the further elaboration of toxin) without, however, having any neutralising effect upon the toxin already in the system. Or, in other words, in the so-called mild cases, or in the early stages of tetanus, but with unmistakable symptoms present, the amount of toxin in the system is not sufficient to destroy life and is eliminated, provided the organisms are destroyed or rendered inactive by the serum. But in advanced cases the system is so surcharged with toxin as to bring about fatal results, notwithstanding the fact that the serum may have had a fatal action upon the germs themselves, and therefore recovery is extremely doubtful, if in fact it can be looked for at all, no matter how such serum is administered, as its lethal effect is upon the germs, preventing their forming any more toxin, but having no neutralising effect upon the fatal amount of poison already formed and in the system.

Making our deductions from the above reasoning, we would infer, (1) That it is as an immunising agent the serum is of the greatest value; (2) that when administered early, even after the symptoms have appeared, but before the indications of a fatal intoxication which the more extreme symptoms would, of course, suggest, antitoxin may give gratifying results; and (3) that in the advanced stage of the disease it is of little or no value.

The difficulty with some practitioners, and the reason for failure, seem to be due to their indecision as to the amount to be used, and the stage at which to give the serum as a therapeutic agent. Ten c.c. of some preparations may be sufficient as a preventive, but when sufficient time has elapsed to permit of the multiplication of the organisms in a wound, for instance, it will of necessity, or in all probability, require a larger amount to do effective work. Hence the necessity for "pushing" the antitoxin from the start. If it were possible to know just how much would be required to destroy the organisms and prevent any further toxin being formed the matter would be much simplified. But this does not, in the present state of our knowledge, seem feasible. We have, therefore, to administer the agent in quantities which we have fair reason to presume will prove effective. Giving minimum doses at the beginning and gradually increasing the quantity seems only to delay the attainment of the object sought, and rather courts disaster than otherwise, as the small injections may have had only partial effect, and the toxin-formation not altogether checked until more has been elaborated. Doses of larger quantity given, say three times daily, for the first two days or so and then gradually reduced in quantity and the interval shortened seems, as one would anticipate, to give much more gratifying results. But when the disease has reached the point when, from the symptoms, it appears stationary, the antitoxin has then evidently done its work, and it seems unnecessary to continue its use, as its germicidal effect has apparently been established and, as previously indicated, its neutralising effect upon the toxin (which has to be eliminated from the system through the natural channels) seems *nil*.

During the years 1896 and 1897 I had occasion to treat some eight cases of tetanus in the City of Baton Rouge, with the results given below. I may state that, so far as I remember, the infection gained entrance through nail-punctures in the feet, but on account of the wounds being undiscoverable none of them were treated. In all of the cases the symptoms were unmistakable (opisthotonos marked) although treatment was commenced at the earliest possible moment, after they were first observed:

1896.	
June. Bay gelding (saddle horse).	Recovery.
August. Black gelding (fire-engine horse).	Recovery.
Nov. Grey carriage gelding.	Recovery.
1897.	
March. Chestnut dray mule.	Recovery.
„ Bay harness mare (symptoms disease acute).	advanced, Death.
July. Black harness gelding.	Recovery.
Aug. Bay mule (used in delivery wagon)	Recovery.
Date (?) Grey harness mare (symptoms disease acute).	advanced, Death.

1904.
Oct. Bay sugar plantation mule. Prescribed serum and gave instructions for its administration. Recovery.

The method of treatment adopted in the above enumerated cases was to give 20 c.c. doses every six hours (during daytime only) for the first two days; then 10 c.c. with a gradual increase in the length of the interval.

In addition to the above, I am able to give the following record of cases occurring in the practice of Mr. E. Pegram Flower, D.V.S., of Baton Rouge, La., between January, 1900, and December, 1904:
1900.
Jan. 6th. Grey gelding (disease well advanced); 20 c.c. of serum given by owner, contrary to advice of veterinarian. 7th.—Died.
April 18. Bay gelding (symptoms well marked); 10 c.c. given every four hours. 18th.—Died.
May 9th. Bay mule (disease well advanced). Antitoxin given, but animal destroyed the following day.
May 16th. Grey mare (symptoms pathognomonic, but slight); 20 c.c. given night and morning the first day, then 10 c.c. twice per day for two days following. Recovery.
Aug. 29th. Roan gelding (symptoms somewhat advanced); 10 c.c. every three hours for the first day, then 10 c.c. twice daily for the next and five following days. Recovery.
1901.
Jan. 15th. Chestnut gelding, symptoms well marked; 10 c.c. every four hours for three days, then twice daily for the following four days. Recovery.
Jan. 26th. Grey mare mule, symptoms fairly well advanced; 10 c.c. three times on the first day, then a similar quantity twice a day for the three following days. Recovery.
Feb. 12. Bay gelding (symptoms marked but slight). 20 c.c. given between noon and night the first day; then 10 c.c. twice per day for the following five days. Recovery.
May 14. Chestnut mule (disease advanced); 20 c.c. given twice daily for four days. 18th.—Died.
Aug. 16. Grey mule (symptoms just apparent); 20 c.c. twice per day for two days; then 10 c.c. twice daily for five following days. Recovery.
1902.
April 1. Chestnut mule (symptoms just apparent); 20 c.c. once per day for four days; 10 c.c. once per day for two days following. Recovery.
May 24. Bay gelding (symptoms well marked); 10 c.c. every four hours for three days. 27th.—Died.
June 10. Bay mule (symptoms well developed); 20 c.c. on same day; then 20 c.c. twice on following day. 12th.—Died.
Oct. 23. Grey mare (symptoms slight); 20 c.c. twice on first day; 10 c.c. twice daily for three days, and 10 c.c. once per day for two following days. Recovery.
1903.
Jan. 9. Bay mule (symptoms sub-acute); 10 c.c. twice daily for three days. Recovery.
Mar. 10. Dun gelding (symptoms apparent); 20 c.c. twice per day for two days; then 10 c.c. twice daily for three succeeding days. Recovery.
June 28. Bay mare mule (symptoms quite apparent); 30 c.c. thrice daily for two days; then 10 c.c. twice daily on three subsequent days. Recovery.
June (?) Bay mare (disease well advanced); 30 c.c. on afternoon of first day; then 20 c.c. twice on the following day. Destroyed.
Sept. 20. Grey gelding (disease well advanced); 20 c.c. twice same day; then 20 c.c. twice on following day. 22nd.—Destroyed.
Oct. 15. Bay gelding (symptoms slight); 20 c.c. on same day; 20 c.c. twice on following day, and 10 c.c. twice per day on two followings days. Recovery.
1904.
Feb. 2. Grey gelding (symptoms apparent but mild); 20 c.c. twice daily for four days. Recovery.
April 16. Bay mule (symptoms just apparent); 20 c.c. thrice during first day; 20 c.c. twice during second day, and 10 c.c. twice a day on the three following days. Recovery.
July 2. Chestnut mule (symptoms apparent); 20 c.c. three times during first day; 20 c.c. twice during second day, and 10 c.c. on three following days. Recovery.
July 11. Bay gelding (symptoms well developed); 20 c.c. twice daily for three days. 14th. Died.
July 28. Bay mule (symptoms well developed); 20 c.c. twice per day for three days. 31st. Died
Sept. 28.—Black mare (symptoms well developed); 30 c.c. and 20 c.c. on first day; 20 c.c. thrice on second day. 30th. Destroyed
Oct 1. Black gelding (disease advanced); 20 c.c. each day for two days (given contrary to judgment of veterinariau). 2nd. Died.
Dec. 1. Bay mare (diseased advanced); 40 c c. on same day (given at request of owner). 2nd. Destroyed.

Here is a record of seven recoveries out of nine cases treated by myself; and of fifteen out of twenty-eight in the practice of Mr. Flower. In every instance recovery took place in those cases which were taken early, Those that died were all well advanced in the disease, and were, in some cases, treated more to satisfy owners than with the expectation of recovery.

I may state that I was familiar with the majority of Mr. Flower's cases, and can vouch for the accuracy of his record, as I have it from his own books.

The above records are of cases which occurred under my own eye, so to speak, in and around Baton Rouge only. and within the dates mentioned. But the disease is quite prevalent in this part of the world, and I know that in the City of New Orleans the success of the serum treatment, when administered early, has been about on a par with Mr. Flower's and my own. And, further, Mr. Flower informs me that, in some 25 to 30 operations, accidental wounds, etc., of late, where he has had a "free hand" in the matter of preventive treatment with the serum, he has not had a case of tetanus develop.

Of course it goes without saying that when wounds can be discovered they should be thoroughly disinfected and kept aseptic. But it is often almost impossible to accomplish this in deep punctured wounds, and, to avoid the risk of imperfect asepsis it seems the better part of wisdom to administer an immunising dose of antitoxin.

Last year, through the courtesy of the attendant physician, and being intimate with the family, I had the privilege of watching a case of tetanus in a boy fourteen years of age. The lad had received a punctured wound in the ball of his great toe through stepping on a nail that was projecting from a plank. The physician treated the wound, and felt satisfied that he had rendered it germ-free. On or about the tenth day after the accident, the boy began to feel slight stiffness about his jaws, and complained of the muscles of his back being uncomfortable. Serum therapy was at once adopted, with recovery as the result, 110 c.c. in all, having been administered. The point I desire to make, however, is that on about the twelfth day, after the accident, and after frequent and careful (as the doctor thought) treatment of the wound, a piece of leather from the boy's boot, which the square point of the nail had carried in before it, was taken out; and which is an instance of how difficult it is to be absolutely certain that deep punctured wounds are always aseptic, even after what one would presume to be thorough disinfection.

In the present state of our knowledge and experience with this prophylactic agent, in this particular connection, I am very much inclined to the opinion that a physician, or surgeon, who, knowing of the value of the antitoxin, fails to urge its use, as such, is little short of being culpably negligent.

My reasoning with regard to the action of the antitoxin may be faulty and open to criticism, as laboratory experiments made with it seem to indicate that it is without germicidal action. What the effect may be on the organism in the living tissues is a point, I think, which is still debatable, Whatever its specific action, however, whether on the toxin, the organism, or some anti-body, records such as those above enumerated cannot but be impressive of the fact that there must be some virtue in tetanus antitoxin, not only as a preventive but as a therapeutic agent, when intelligently administered as to quantity and time; and I trust that a perusal of them may be the means of giving encouragement to readers of *The Record*, whose faith in the serum treatment may have, hitherto, been shaken by untoward results that might have been otherwise.

W. H. Dalrymple, M.R.C.V.S.

Louisiana State University,
Baton Rouge, U.S.A.

The third of a series of public lectures was delivered in the Schoolroom of the Congregational Church, Wollerton, by Mr. R. Clunas, M.R.C.V.S., Hodnet. The subject was "The Mystery of the Black Art, some stories of Highland Superstition." After an excellent introduction, the lecturer spoke on Witchcraft, the Evil Eye, Enchantment, Apparitions, etc., illustrating each with examples.

SLOUGHING OF THE VAGINAL WALLS.

On November 28th I was called to a cow which was straining very severely, The cow had calved two months before her time, the legs had been back but it only took ten minutes to straighten the legs and take the calf away. The cleansing had been pulled away by the owner.

On examining for the cause of the straining I found the walls of the vagina thickened hard and indurated; manipulation caused excessive expulsion efforts, so I washed out the womb with chinosol, left a few tonic drinks, and was to be called again if she did not improve.

Dec. 6th, sent for again. Cow still straining badly. On commencing an examination I found the walls of the vagina sloughing so I passed chinosol solution through a catheter behind the slough which, when expelled, cleansed the surface of the slough. I left a syringe to wash out the anterior portion of the vagina and gave ergot to prevent any discharge being locked up in the uterus. I washed out the passage daily for three days, and in a week's time the whole coating of the vagina sloughed away in a nearly perfect cast. The cow fed well all through and made an uninterrupted recovery. The only change is that the cow arches her back excessively when urinating, and the urine is sprayed as it comes away. This cow took the bull again and stood to the service. I then lost sight of her.

Arnold Spicer.

DISTEMPER.

By Henry Gray, M.R.C.V.S., Kensington.

As I am desirous of learning something from my critics I again take up my pen to invite criticism on a very complex question the nature of canine distemper. My only object is to construct the puzzle, leaving the always easy matter of destroying it to others.

Now it appears to me that Mr. Gladstone Mayall, and probably his apparent supporter, Mr. A. J. Sewell, do not care to answer the question I have already twice, and will again for the third time, put. "How did he discover the absence of eruption or any other phenomenon before he was called in to see his *isolated, far advanced cases*?

I affirm that, notwithstanding my friend Mr. Sewell's thirty years exceptional experience, the eruption is present or has been present in the majority if not in all cases of distemper.

Drs. Friedberger and Fröhner say it is seen in about half the cases encountered. Prof. Trasbot adds. if looked for, in the majority if not all. All eminent authorities since the eighteenth century down to the present time including Barrier, Jenner, Viborg, Blaine, Urbain and Camille Leblanc, father and son, Mayhew, Hertwig, Zündel, Mégnin, Mellone, Micelloni, Krajewski, Laossan, Babes, Barganesc, Gallio-Jalerio, Lignières, Phisalix, Nocard, Leclainche, Mathis, the Phisalix Vaccina-

tion Committee (*vide* Majority and Minority Reports) etc. are agreed as to the eruption being present, and many of them pronounce it an "eruptive disease."

Messrs. Mayall and Sewell evidently don't agree to this, although the latter gentleman casually mentions it in two or three places in describing the disease in his edition of *Mayhew on the Dog*, and states in his letter appearing in *The Veterinary Record* of Feb. 4th, 1905: "It is the exception and not the rule for a canine distemper patient to have an eruption on the skin," and adds: "In cases where the skin does become affected I have generally *noticed* it is in young puppies." (The italics are mine).

To make myself understood I will again point out:—

(1) That a discrimination should be made between the primary and secondary or recurrent exanthem and the concomitant skin diseases, the latter being commonly engrafted on the debilitated system.

(2) That distemper may and *does* frequently run its course with no other manifestation than the true exanthem.

(3) That as these cases are not anticipated, and as the disease generally is only observed when far advanced, the primary eruptive stage, which does not as a rule stare one in the face to attract attention, is mostly overlooked.

(4) That this eruption, with or without the usual catarrh, etc., is diagnostic, in fact, *absolutely* diagnostic of distemper.

(5) That the clinical thermometer unless it shows a positive elevation of temperature or a sub-normal temperature is of *no value*; on the contrary, it may be *very misleading in the diagnosis, prognosis,* and treatment of distemper. Dogs having no abnormal temperature often die; when showing high temperature frequently recover, as they may do in some cases of subnormal temperature.

(6) That many of the manifestations of distemper are due to secondary infections and are complications or epiphenomena, which may in some instances, the pneumonic cases at least, be in their turn communicated to simple uncomplicated cases of distemper. Mr. Sewell agrees to this.

(7) That although it has always been and is generally admitted that one attack of distemper confers relative immunity to a second attack, second and even third attacks are not uncommon. A recurrence may take place two or three times even within the year. (Friedberger and Fröhner saw the disease affect a dog four times within a year. Blaine and Youatt say it may recur two or three times. Last year I saw several cases affected two and three times from undoubted contagion. Mr. Sewell in his edition of *Mayhew on the Dog* mentions facts which lead one to conclude that it may attack a dog more than once.)

(8) That relapses are far from rare.

(9) That the period of incubation is elastic, and latent infection is common.

I have seen the characteristic, and therefore diagnostic exanthem, minus catarrh, etc., very often in adult or aged dogs, as well as frequently in puppies. Generally in aged dogs this eruption is preceded by dullness, loss of appetite, and a high temperature which disappear as soon as the rash has come out, and when put under *favourable circumstances* no other manifestation has appeared.

It seems very probable that Messrs. Mayall and Sewell encounter these cases but don't distinguish them as distemper, merely treating them as cases of skin disease.

IMPERVIOUS TEATS.

This curious case came to the State dispensary to-day for treatment. It was quite a novel sight to me, although it may not be so to most of the readers of your paper.

The subject was a four-year-old cow, and belonged to a poor Mahomedan farmer, who came in haste with the history that his cow had calved but would not give milk in spite of all his attempts at removing it. Thinking it perhaps to be a case of mammitis at first, I made a close inspection and was quite surprised to find complete absence of every teat, but there were the usual coloured four round spots, showing the seat of nipples.

As the cow was restless and would not allow to be touched when standing, I had it cast. On examination by palpation I could not find any opening on the skin, but below every seat of nipple there could be felt finger-like processes moving between the fingers. I made an incision and exposed one of them and removed most of the milk with the aid of a teat syphon. Finding this to be successful, the same was done with the other three, and the cow allowed to stand up.

My object in writing to you is to know if such malformation of the udder is a frequent occurrence and what means could be devised to make such a cow useful to its owner and its calf.

JOACHIM DACOSTA.

Vety. Hospital, Khairpur State, Sind.
9th January, 1905.

ABSTRACTS FROM FOREIGN JOURNALS.

BACILLUS COLI EQUINUS.

Much has been written on the intestinal flora of man and incidentally on that of experimental animals as cats, dogs, rabbits, guinea-pigs, monkeys and so forth, but the intestinal flora of the large herbivores, and that of the horse especially, has to a great extent escaped observation although there is little doubt but that it plays an important part in many diseases which affect the horse.

Man emits some 30-50 milliards of micro-organisms in his fæces daily, which have been shown to have an important bearing upon health.

There are pathogenic organisms constantly present in the bowels which are only awaiting an opportunity such as a perforation to become active and set up peritonitis. Other microbes are absorbed through the mucous membrane and enter the circu-

lation. Now in the liver, spleen, and lungs of horses dying of intestinal typhoid diseases it is not uncommon to find organisms apparently identical with those usually inhabiting the intestines, and therefore it does not appear to be entirely void of interest to trace them to their habitat.

Bacterium Coli.

It would be superfluous to dwell on the importance of B. coli in man or to dilate on the group of diseases called coli-bacillosi in which it has an interest, it will suffice to note that they are of various grades of virulence, and that B coli is found in the blood stream and intercepted in the glands. So some obscure forms of disease in the horse are apparently in some form or other connected with B. coli.

In July, 1894, Nocard found a coli bacillus in the spinal medulla of a mare that had died of infective paraplegia, and this was also recognised by Couremy in an epizootic which proved fatal to 34 mares out of 80, and three mares out of 28.

In 1897 Piana and Galli Valeria examined two horses that had died of typhoid and isolated from the brain, lungs, liver, and spleen, a micro-organism presenting many of the characteristics of B. coli communis, which they termed B. coli var. typ. equino.

Perroncito also recognised in typhoid cases a micro-organism which macro—and microscopically in culture and behaviour seemed almost undistinguishable from B. coli. Brusasco and Boschetti too when treating of typhoid diseases of the horse, say that the primary infective intoxication is due to a B. coli or a micro organism almost identical.

Pirkowski and Jess in 1901 attribute to the action of B. coli an enzootic characterised by high fever, with diarrhœa, and death sooner or later.

Nocard and Leclainche consider it to be the same as the primary septicæmia of Dieckerhoff.

But it seems advisable when considering forms of septicæmia, especially in the abdominal organs, such as enteritis, colic, peritonitis, etc. to find out whether there exists in the intestines of the horse, as in other species of animals, a B. coli commune and whether this exists under one or more forms.

Dyer and Keith seem to have recognised it and called it B. equi intestinalis.

In 1900 Moore and Wright found a B. coli identical with that of man, but not present in constant numbers in the horse.

Isolation of B. coli equini. A series of experiments was made on 25 horses. Dung was removed from the rectum under all aseptic precautions and cultures made from the inner portions in Abba's broth.

In 12-16 hours at 37° the broth was discoloured and a culture made from it on agar, and the next day colonies were flourishing in broth, milk, gelatine, potato, agar, agar on 2 per cent. glucose, agar Würtz etc. all showing the characteristics of B. coli.

Twenty-five series of field cultivations were made from the 25 horses resulting in :—

1. Twenty-one cases a bacillus identical with B. coli of man was isolated.

2. In two cases the bacterium was identical, except that it did not produce gas or phosphoresence on agar etc.

3. In one case it had all the characteristics except that of coagulating milk.

4. In one case, all the characteristics except it did not produce indol in 1 per cent. peptone broth, but did so in 2 per cent. in three days later cultivating. All these coli and coligeinili developed at 14° and were pathogenic to guinea-pigs on endo-peritoneal injection, and set up subcutaneous abscesses in rabbits, and maintained their characteristics when passed through control animals.

These experiments showed that there are in the horse's intestine micro-organisms almost exactly like B. coli, and yet differing in some one or more details. So a second series of experiments was undertaken with a view of isolating some of these *coli simili.*

All germs liquifying gelatine were eliminated, and the remainder were studied for shape, motility, Gram reaction, indol production; or were sown on milk gelatine or Würtz preparation, or produced gas, coagulated milk, or grew on potato or reddened Würtz agar. Then for their pathogenic properties by intra-peritoneal injection in guinea pigs, or subcutaneously into rabbits' ears.

Plates were taken from another group of 25 horses all in different localities and on different rations. In these cultivations *B. coli* type predominated in 15/25; appeared in small colonies in 4/25; and was absent in 6/25. Those showing fewest B. coli came from thoroughbreds, and those showing most from troop horses, and that may be accounted for by the fact that the latter are allowed to, and seem fond of eating their bedding.

Other coli simili were studied in the 2nd series of experiments. In three cases there was a motile bacillus with all the properties of B. coli, except coagulation of milk and production of indol. In two cases a very motile bacillus, pathogenic in guinea-pig peritoneum, decolourising with Gram, growing freely on potato at 14°, but not coagulating milk, producing gas or reddening Würtz agar.

In five cases bacilli varying in shape, with rounded ends, appearing as cocci, strepto-bacilli, and filaments, and were distinguishable from the former by not developing on potato, and were not pathogenic to guinea-pigs intra-peritoneally.

All these were coli simili, but in 14/25 isolated, 8/25 mixed with B. coli, and 6/25 not associated with B. coli, were large ovoid bacilli, diplo- or strepto-bacilli, about twice as long as broad, non-motile, taking Gram well, 1u—1·5 or 2u long, producing small globose colonies like drops of water remaining independent of one another. In broth, producing a turbidity and scum, on agar a brownish to chocolate tinge.

These grow well at 20°, do not produce indol or gas, do not coagulate milk, and are not pathogenic to guinea-pig peritoneum.—*La Clin. Vet.*

F. E. P.

Compensation for Slaughter in Cases of Glanders in France.

At the sitting of Dec. 28, 1904, the Senate adopted on first reading and without discussion a *projet de loi* already voted by the Chamber of Deputies, by which an indemnity of three-fourths the value of the animal before it was affected is allowed to the owners of animals slaughtered for glanders or farcy. Such indemnity is not to exceed 750f. (say £30). Applications for the indemnity are to be addressed to the Minister of Agriculture within three months from the day of slaughter. The Minister may revise the valuation of the animals under conditions fixed by Art: 50 of the *Code rural.—Rev. Gén. de Méd. Vét.*

SEPTIC INFLAMMATION OF THE HORSE'S LEG.*

W. Hunting, F.R.C.V.S.

When I sent the title of this paper to Mr. Dawes I failed to fully appreciate the fact that ignorance of bacteriological work would render my treatment of the subject of less value, if not quite inconclusive. The largest clinical experience and the closest observation of cases do not make up for want of bacteriological examination. We ordinary practitioners recognise certain conditions, and sometimes are able to classify them, but when they are due to organismal infection it is necessary that we should arrive at some trustworthy opinion as to their cause. We know they are due to the presence of microbes, but we do not know to which class or variety. Probably a good deal of microscopic work might be done and afford little more information than that the cause was a mixed infection. But there are cases, which we frequently see, which resemble each other so closely, and which are so unlike some other cases that we must believe they are due to definite causal organisms. One wound causes little pain or swelling, another is accompanied by great pain and rapid swelling, still another shows pain, swelling and a tendency to sloughing and necrosis. Again, we find one injury remains local—when suppuration occurs it takes the form of a circumscribed abscess. Another injury, similar in position and extent, is followed by suppuration that spreads among the tissues and shows little tendency to definite abscess formation. Surely these must be conditions effected by very different causal elements. Even allowing for the peculiarities of individual animals—age, constitution, and surroundings—the different behaviour of apparently similar injuries can only be accounted for by the varieties of infecting organisms.

Now I have to confess to not having examined my cases microscopically, and further I must add that even had I done so I should probably have been unable to differentiate the organisms I might have detected. A little closer union of the clinical observer with the trained bacteriologist might largely increase our knowledge. It would help us to diagnose and classify, even if it did not afford much guidance to more successful treatment.

Confining my remarks to septic inflammations of the leg, and chiefly to conditions found below the knee and hock, I shall be able to condense this paper within a small area, and possibly avoid floundering in regions quite out of my depth.

* At the meeting of the Midland Counties V.M.A. Birmingham, Feb. 10, 1905.

The legs of horses from their position are more liable to injury than the bodies. Their constant contact with the ground increases their chances of varieties of microbic infection when wounds exist. The structures of the leg, including few soft tissues, favour the most intense pain as an accompaniment of inflammation. The vertical position of the limb also favours swelling, as gravity retards free circulation through the lymphatic and blood vessels. Such structures as bone, tendon, ligament and cartilage suffer rapidly from inflammation, whilst their repair is slow even when the pathological changes stop short of necrosis.

Many wounds of the leg are never more than a local injury which heals rapidly and leaves only a small scar to mark its existence. Others cause grave symptoms—violent local changes and constitutional disturbance. The first appearance of injury gives no suggestion of the lesions which may appear. In fact a small and trivial wound may be followed by violent inflammation, whilst a large and deep one may heal with very little complication.

Alarming symptoms may arise as the result of injury which cannot be detected. I believe that all our cases of lymphangitis are septic infections, although it is rare to find any wound of the skin through which we can say the infection passed. The common appearance of these cases on Monday—after Sunday's rest—has led to theories which would classify lymphangitis as a dietetic disease. But free feeding and cessation from work are not the only conditions of the Sunday's rest. Idleness begets playfulness; and kicking, especially in bale stables, is the regular Sunday afternoon's amusement for a stable full of horses. Injury results and, as we should expect, nearly always to a hind-leg. The conditions certainly favour the rapid extension of any organismal infection because the lymphatic system is surcharged, due to feeding being continued and exercise having ceased. That this hypothetical condition of the lymphatic system exists I believe, for the following reasons. I presume that the animal body acquires by habit a balance between digestion, nutrition, and excretion. So long as the customary conditions of feeding and exercise are maintained a healthy balance exists. Excess or deficiency of either leads to a faulty balance, but this is soon rectified by the automatic action of the system, and when not long continued passes without notice. The horse that is idle for many days whilst still allowed the food which was his portion when daily worked takes little harm after the first three days, because his system does not use or assimilate the excess of nutritive material passed through his stomach. His circulatory systems are not distended. The horse that works hard six days of the week and stands idle in the stall on the seventh has time to upset his nutritive balance but not time enough to recover it—assimilation goes on, waste is wanting, and the lymphatic system becomes distended.

Butchers discovered by experience that unless they starved an animal for some hours before slaughter the carcase was not so dry and firm as they wished it. To my mind the explanation is that by starvation the lymphatics were partially depleted of their contents. Pig-spayers, long before germs were more than suspected and when asepsis was unknown, recognised the necessity of a short starvation of their victims before operating. The value of preparation of a patient for an operation has been proved by time. The routine consists of a dose of physic and dietetic regulation. What effect is produced other than depletion of the lymphatics?

We know that microbic invasion is usually along the course of lymphatics, and it seems reasonable to believe that invasion is facilitated by a full stream. A full and slow lymphatic stream is just what we have in the overfed and temporarily idle animal. This is the condition prevailing in most stables on Sunday and, given the introduction of a septic organism, we find on the Mon-

day just the changes in the limbs we should expect. What special organism causes lymphangitis I do not know, but the symptoms are those of a microbic invasion.

If we always knew when a wound was or was not septic treatment would be simplified and we should be able to prevent much serious damage and some loss of life. Picked-up nails cause some of the most serious septic inflammations met with in practice. Frequently we can only guess at the distance and direction of the injury, and the probe does not help us much. Two months since I had in one day two cases of injury by picked up nail. In both the nail penetrated the side of the frog and passed upwards and backwards into the plantar cushion, entering the soft tissue for perhaps an inch. Both cases were treated alike—shoe removed, passage through horn widened, warm fomentation for an hour followed by a pad of cotton wool steeped in a strong antiseptic. One was at work in a few days. The other was in great pain for weeks, suppuration escaping from three different openings in the heel and at the coronet.

The inference is that one was a mechanical injury, and the other a septic infection. Even had I known one was inoculated with a pus-producing organism what could I have done. A punctured wound through the frog extending an inch into the plantar cushion might possibly be aseptised, but is it a feasible practice? It is too late when the pain etc. shows that the wound is infected, and yet few of us would advise that every foot wound should be radically treated at the outset as though it were sure to be followed by septic inflammation. I acknowledge, as a counsel of perfection, that every foot wound should be treated as though it were certainly a septic wound. It is, too, not such a difficult matter perhaps in practice to carry this out. When we consider the grave complications which too often arise from neglect of this procedure, we are justified in taking far more trouble than most of us do. I know with some men it used to be a routine practice to "well cut out" all wounds through hoof, but I never could approve the procedure. It might now-a-days be conducted with aseptic precautions, but cutting through hoof always does some harm, and unless followed by the most careful antiseptic treatment probably permits the entrance of septic germs. Mere removal of horn down to the surface of the sensitive structures is quite useless when the wound penetrates an inch farther and has been infected by the point of the object which caused the wound. When I say removal of horn I mean denudation of a portion of the sensitve foot. I do not object to removal of hoof effected for the purpose of so thinning the horn as to relieve pressure of swollen and inflamed tissues. A thin layer of horn is as protective against germs as a thick one, and the tension of injured tissues is certainly less impeded when the covering or surrounding horn is thinned. I really believe that twenty years ago more serious foot cases resulted from the treatment adopted than from the original injury. I am not sure that some cases may not still be credited to ill-considered treatment.

Take the case of what are called "corns"—a bruised heel. Modern practitioners do not cut through the horn simply because a horse is slightly lame and a stain is found in the heel. If we have good grounds to suspect the presence of matter we do cut through and give it exit. No one likes to wait until it breaks out at the coronet, but a good deal of this dread is due, not to the mischief which must follow, but to an anticipation of serious changes due to septic infection.

Many corns "break out at the top" and heal up without a complication. The discharge which escapes when a corn is cut into through the sole is not ordinary pus. Whether it contains any organisms I do not know. But I do know that after the sole is cut through septic organisms are able to penetrate, and then we have suppuration which may spread and cause secondary conditions far more serious than those primarily traceable to the injury.

Again, in wounds of the coronet due to treads we have sometimes a simple wound, sometimes one in which a large portion of tissue is killed, and we know that necrosis will be followed by a slough. Any of these wounds may become invaded by pus-producing organisms—most of them do, but it is only a proportion that give rise to the serious condition known as a "quittor."

In passing, I should like to offer a definition of a quittor. It is a suppurating wound above the coronary band due to necrosis of the lateral cartilage. In 95 per cent. of quittor cases the cartilage is the offending necrosed structure. In a few cases of suppurating wound at the coronet the necrotic tissue that keeps up suppuration is a loose piece of the pedal bone. In some still rarer cases there is no necrotic mass—only the wandering of pus-forming organisms through the lymphatics, and the repeated formation of abscesses. The term quittor should be limited to those suppurating wounds in which the lateral cartilage is diseased. In cases where the suppuration escapes anywhere except above the coronary band the word quittor should not be used—as for instance in the heel. Very many quittors would never arise if the original injury were treated with a direct view to prevent septic infection. In bad treads where a portion of necrotic tissue remains for some time in the wound, it is almost, if not quite impossible to prevent the collection and development of septic organisms. Such necrotic tissue should be removed as early as possible if it is not thrown off speedily as a slough. Quittor, with necrosis of the cartilage, does not occur as the direct result of the injury which it follows. The clinical history of a quittor is that an injury occurs, great pain follows, suppuration appears. Then there is a pause, pain lessens, and the constitutional disturbance abates. Next there is an increase of pain, swelling of the coronet, and after some days pus escapes above the coronary band. The second phase is the accompaniment of the formation of a secondary abscess and this abscess does not heal because of the necrosis of the cartilage that is brought about by the abscess.

Two other serious conditions that result from septic infections of the foot and leg are the inflammations which attack sheaths of tendons and articular surfaces. Wounds of the fetlock, coronet, heel or of the plantar cushion are often in existence for days (sometimes for weeks) as apparently harmless suppurating wounds; then suddenly pain increases, swelling of the limb appears, and we know that septic infection has happened and most likely involved other structures. It may be that only a superficial secondary abscess is forming—not a very serious complication—so long as its contents are evacuated and that it is not followed by others.

When the sheaths of tendons become involved we have an almost incurable condition. Acute pain, great swelling and general constitutional disturbance set in. As soon as suppuration can be located incision is necessary, but the evacuation of pus is difficult as dependent openings for its escape cannot always be obtained. An even graver complication is when an articulation is invaded. The navicular, pedal, and coronary joints frequently suffer. Swelling of the coronet and intense pain are again marked, followed by suppuration and its escape mixed with synovia. Nearly all such cases are hopeless, and slaughter is merciful and economical.

In some cases of septic articular inflammation diagnosis is impossible. Pain and swelling suggest the lesion and its location, but no suppuration follows, and a post-mortem examination reveals a patch of circumscribed necrosis and a loose fragment of bone almost like a fracture.

As a rule septic inflammation spreads to tendon-sheaths from wounds at the back of the leg or from the plantar cushion. Joints are invaded usually from cellulitis in the anterior coronary region. Death is probably due to shock and septicæmia.

I often wonder that "cracked heels" are not more often accompanied or followed by septic-inflammation. They may be open wounds for weeks, and their position is one likely to favour septic invasion. Probably the fact that they are often covered by granulations protects them, but exercise occasionally causes them to bleed and then infection would be possible.

When a cracked heel becomes extra painful, the edges of the wound swollen, and the leg above enlarged we have a cellulitis that is undoubtedly due to septic invasion, and we may have this serious condition without any visible wound.

Of all septic inflammations of the horse's leg I know of none so serious and violent as what has been described as cellulitis. I do not know what organism is the cause, whether it is a streptococcus or the bacillus of malignant œdema. My experience only includes five cases, and three of them were fatal. In one there was a wound on the inside of the fetlock due to "brushing." In another there was a cracked heel. The remaining three had no wound that I could detect. One of these horses was off work from some temporary illness and occupied a rather dirty loose box with a moss-litter bed. The first symptom shown was lameness and pain, and no special part could be defined as to the locality of the pain. But there was soon swelling, commencing at the coronet, and rapidly extending up the leg. This swelling in 24 or 48 hours reached the knee or hock, and the leg was shapeless and round. The slightest touch on the tense skin was resented. Then in a few hours one or more places lost their tenseness and became doughy—a condition rapidly followed by sloughing. Sometimes the doughy patch was small as a half-penny, in others it was half the size of my hand. In one case a slough on the inside of the leg, just above the fetlock included three inches of the vein, artery and nerve.

My first two cases occurred in the same stables, but at an interval of some months. I never saw anything to suggest that the infection might be directly transmitted to other horses. The first three casese were all fatal in a few days, and I rather think my treatment aggravated them. I employed constant hot fomentation with opium and belladonna. The two drugs were used dissolved or suspended in hot water poured frequently over the flannel bandages. Talking to a professional friend about these cases he advised sprinkling the leg occasionally with a cold solution of sulphate of zinc to which about 5 per cent. of carbolic acid had been added. This treatment was adopted with the next case, in addition to early incision through all doughy patches. A slow recovery followed. The last case I only saw in consultation. It was similarly treated, and recovered with a leg blemishod by scars and one large swelling on the fetlock.

The pain and constitutional disturbance were as great as in any cases I have seen. I don't know that it is more than a coincidence, but the three fatal case were in omnibus horses, the two recoveries in lighter classes of horses.

As to the general treatment of septic inflammations of horses' legs I venture to think that heat and moisture in the form of poultices or wet bandages are things greatly overrated. We use them with a hope of allaying pain, but I doubt whether any such action results. I have also seen slings used with a view to support the horse when he did not lie down. I think slings are in such cases altogether an evil. A good bed in a big loose box is far better, even if you have to use slings to get the horse up when he has been down some hours.

In the cases of cellulitis I hesitate about incision until I feel a part doughy instead of tense. I have been afraid to incise the skin until I felt some part giving way to suppurative changes. I feared lest my incisions might cause sloughing. I am quite sure that free incision is good treatment when we are convinced of the presence of pus underneath the skin. Perhaps I was too cautious.

There is just one more condition resulting from septic-inflammation of the foot and leg that I must refer to. Treatment is not available; but it demonstrates the danger of neglecting suppurating wounds. Every practitioner has occasionally met with cases of suppurating wounds of leg or foot which suddenly have been followed by pneumonia. This I take it is due to embolism.

I incline also to think that some of the cases of articular disease which follow septic wounds are due to emboli. The lesion found is so circumscribed and so sharply separated from the apparently healthy tissues around that it seems more easy to explain them as due to something which cuts off the nutritive area supplied by one small vessel than by any other supposition. There is not at any rate a visible continuity of the inflammatory process from the original centre to the articular lesion.

Gentlemen, I recognise that the paper is sketchy and inconclusive, but I know that the writer is only one of those assembled to discuss the subject.

STERILIZING WATER IN THE FIELD.

A number of devices for effecting the sterilisation of drinking water for troops in the field were to be seen at Millbank Barracks on Friday afternoon. Three main methods were represented, depending respectively on chemical means, on filtration, and on heat. Of chemical processes there were six, and the first, that of Schumburg, a bromine solution (bromine, bromide of potassium and water), contained in glass capsules holding 2 c.c. each, is employed. Each capsule is broken into one litre of water, which, after a period varying from seven to 30 minutes, is treated with a mixture of sodium sulphite and sodium carbonate, which neutralises the bromine and removes its odour in about two minutes. Experiment shows, however, that the water is liable to have a stale taste, and the necessity of carrying about a number of fragile capsules containing liquid is an obvious objection to the use of this method on the field. The second process, that of Vaillard and Georges, depends on the action of iodine. Three tablets are employed, the first containing iodate of soda and iodide of potassium with a blue colouring matter, the second tartaric acid with a red colouring matter, and the third hyposulphite of soda. Sterilisation requires ten minutes, and after the process is complete the water has no smell, and presents little if any perceptible difference from untreated water. In the third process (Nesfield's), the water is first treated with bleaching powder and bicarbonate of soda, and after sterilisation is complete—about 10 minutes—sodium sulphite is added to render it free of chlorine and tasteless; this, however, it seems to be difficult to do perfectly. The fourth process consists simply in the addition of about 15 grains of bisulphate of soda to each pint of water; it was tried in South Africa, but the men objected to the taste imparted to the water (though this can be got rid of by the addition of bicarbonate of soda), and a further objection is that the treated water is found to take up iron from the water-bottles (1·4 grain per gallon in six hours and 3·5 grains in 12 hours). The fifth process is the old one of adding permanganate of potash; the pink colour imparted to the water is not liked by the men. The sixth

process consists in the use of copper sulphate or chloride. The experiments of Dr. George Moore, of the scientific staff of the United States Government, seem to show that a sulphate of copper solution of the strength of 1 in 100,000 is able to kill both typhoid and cholera germs in four or five hours at laboratory temperatures, but from experiments made in this country by Rideel and Barnes it appears that this strength is ineffective, though a 1 in 10,000 solution kills typhoid, though not cholera bacilli, and 1 in 1000 kills both. In this connection mention may be made of an interesting observation which tends to show that water kept for 24 hours in clean copper vessels is freed from bacillus coli and bacillus typhosus; this suggests that the employment of copper water carts might be advantageous. In the second class of apparatus, depending on filtration, various forms of the Slack and Brownlow field service filter were on view, also a service water cart fitted with the same filters. The other water carts were the Bailey-Denton, with a clarifying filter of charcoal and a Berkefield filter for sterilising, and the Lefebyre with a filter of asbestos and charcoal. But all filters have the disadvantage that the rate of flow soon falls off, and if they are not cleaned and boiled at fairly frequent intervals they become almost worse than useless. In the last group of appliances, where heat is employed for sterilisation, five different varieties were on view. Of these the Leigh Canney is merely a device for boiling water rapidly, unprovided with any cooling arrangement: while the Lefebvre steriliser is no novelty. The other three all have a heat-interchanging device by which the incoming water is warmed at the expense of the heat of the outgoing sterilised water, which thus issues at a fairly low temperature. Among these the Griffiths machine, described in *The Times* on January 13 last, is distinguished by the fact that the water is not actually boiled but simply raised to about 175deg. F., a temperature which the inventor believes to be more than sufficient to destroy all water-borne pathogenic organisms. Weighing 120lb. without its case, it was found in the tests to deliver 60 gallons of sterilised water an hour with a consumption of one and a half pint of oil, and probably this consumption would be reduced if modifications were made in the heat-exchange apparatus so as to cool the effluent water below the temperature at which it now issues—79deg. F. to 92deg. F.—according to the experiments. The other machines—those of Lawrence and of Forbes—deliver the water at a temperature some 20 or 25dgs. lower, but their yield is much smaller.— *The Times.*

THE CENTRAL VETERINARY MEDICAL SOCIETY.

An ordinary general meeting was held at 10 Red Lion Square, Bloomsbury, W.C., on Thursday, February 2, 1905, Mr. E. Lionel Stroud, President, in the Chair. There were present: Messrs. A. L. Butters, Wm. Roots, James Rowe, Fredk. G. Samson, H. M. Singleton, Percy S. Howard, Prof. Woodruffe, J. B. Hare, R. J. Foreman, H. Lomas, W. Perryman, Capt. E. E. Martin, R. Porch, W. R. Davis, James MacArthur, Prof. Hobday, Frank Mosedale, A. Rogerson, A. E. Bayley, A. S. Leese, C. W. W. Brown, W. Macdonald, J. K. Bruce, F. W. Wragg, R. A. Philp, W. Roger Clarke, Henry Gray, W. L. Harrison, Guy Sutton, H. H. Whitlamsmith, and Hugh A. MacCormack, Hon. Sec.; and as visitors Messrs. F. W. Thompson, G. H. Livesey, G. P. Male, and J. Tagg.

On the motion of Mr. Perryman, seconded by Mr. Porch, the minutes of the previous meeting were taken as read and confirmed.

Morbid Specimens.

Capt. Martin showed a specimen of complete anchylosis of the occiput and first cervical vertebra, which was sent to him from Brighton by Lieut.-Col. Clayton, A.V.D., with the following description: "The horse was received in October, 1903, and reported by me as suffering from serious injury to neck, which in all probability would prevent him from being of any use in the service. There was absolutely no trace of recent injury, although the remount authorities declared the horse to have been sound when leaving the depôt. He was, on arrival, in exactly the same state as when destroyed, could not move head except to a very limited extent, and was unable to feed except out of manger; he could not pick up off the ground or from the hay rack above his head in the stables, and had to be provided when in camp with a specially built manger. Consequently he fell away considerably in condition and was unable to give in any way to bridle and only turned bodily, if you understand me. The remount authorities ordered his destruction."

Capt. Martin also showed the heart of a five months old calf which was used in the Army Vaccine Institute. The calf was under observation for about a fortnight, and nothing was noticed with it until it was slaughtered, when it was found that between both auricles and both ventricles there was a large opening, evidently congenital. The carcase was healthy, with the exception of the liver, which was about one and a half times normal size, and showed a very good example of nutmeg liver; while the lungs showed an excellent example of the condition known as brown induration; they had many patches of small brown spots over them, and were very fibrous in condition. He knew it was more or less common to have the foramen ovale between the two auricles patent for some time after birth, but he had never heard of a large opening existing between the two ventricles. The heart was about twice the size for a calf of that age, and the right side was almost as thick and very much larger than the left side.

Mr. Porch asked if the pulse of the calf was taken, and if so whether anything abnormal was observed. It seemed to him that with a large opening between the two ventricles the pulse would have indicated there was something wrong with the circulatory apparatus.

Capt. Martin said that the temperature of calves was taken very regularly directly after their arrival, but not the pulse. The animal fed and appeared to be well in every way.

Mr. Butters asked if Captain Martin observed the colour of the mucous membrane.

Capt. Martin replied that the colour was normal in every way. The temperature was taken twice a day and nothing abnormal was noticed. No special information was to be derived from taking a calf's pulse unless one imagined that something was wrong.

Mr. Butters stated that he made the enquiry because he believed that a form of heart disease was occasionally met with in the human subject, and those who were subject to it had the face almost blue, owing to the blood not getting thoroughly arterialised.

Prof Hobday showed a specimen of multiple fibroma of the uterus and vagina of a retriever bitch. The case was particularly interesting, because such tumours were not met with very commonly in animals, whereas in the human subject they were frequently met with. The specimen was an exceptionally fine one, in fact it was the finest he had ever seen. The bitch had been getting in poor condition for some considerable time, and when she was sent up by a veterinary surgeon for operation the fibroma projected a considerable distance behind her, the end of it protruding through the vulva. When he operated, unfortunately the tumour had already gone some distance into the uterus, he performed a partial

hysterectomy, but the patient collapsed and died about 24 hours afterwards. The specimen was sent to the Cancer Research Society, who reported that it was a multiple fibroma.

Prof. HOBDAY exhibited a skull with fracture at the base, forwarded by Mr. G. S. Thomas, of Chichester. The animal was a five-year-old hunter mare, and was frightened whilst being held by a shepherd. She broke away, galloped down a couple of fields, and on coming to a gate was tempted to jump it, but fell on her head the other side. When Mr. Thomas examined her she was lying on her side with blood oozing from her left ear. There was convulsive twitching of the left eyelid, whilst the pulse was barely perceptible, about 18 or 20. She was perfectly comatosed. No outward lesions were to be seen, but fracture of the base of the skull was diagnosed and she was shot. The post-mortem examination showed fracture of the skull.

Mr. PORCH said he only remembered, in the whole course of his experience, having seen one case similar to that shown by Prof. Hobday. The horse was tied up to a ring when something frightened him and he reared up. The halter broke and he went over on his back, breaking the base of the skull. The symptoms given by Prof. Hobday were very similar to those in his case, with the exception of the bleeding from the ear which he did not notice. On making a post-mortem he found a fracture similar to the one shown. It would appear that any violent force used on the back of the skull produced such a fracture.

Mr. J. B. A. HARE corroborated Mr. Porch's remarks, and narrated a similar case where the horse died almost immediately from hæmorrhage, if from nothing else, because the blood simply poured down both nostrils; he did not notice any blood coming from the ears. The post-mortem revealed fracture of the skull.

Mr. R. FOREMAN mentioned a case where a horse went over in just the same way, and then shivered a few times, but in a few moments the horse got up again. There was a little trickling of blood from the nostrils, but there were no further symptoms.

Mr. TAGG said that while he was in India he remembered a case of a horse which had won the Lincolnshire handicap which took to savaging his groom. One morning the horse got loose and ran up against a tree, which had a spike projecting from it in consequence of the tree having been sawn about halfway through and then being broken off. The horse died instantly, its brains being spattered all over the tree. He remembered another case where an owner used to turn his horses out in the winter time in a paddock. One horse ran his head up against a tree and made an indentation about half an inch or an inch deep, into which a pigeon's egg could be dropped, and he believed the horse was alive to-day.

Mr. LIVESEY showed the upper and lower jaws of a Boer pony which was known to be at least 45 years old. The man who captured it said it was an excellent galloper. The lower teeth had been polished apparently by the grit and sand picked up on the veldt.

Mr. LIVESEY showed calculi and other specimens as follows:—Subject, Yorkshire terrier, 10 years old, had been in the hands of another V.S. in a neighbouring town on the South Coast, and was reported to its owner as suffering from diabetes. The dog was sent to me on the 21st January in the following condition: The body very emaciated, weighing about 6½ to 7lb., eyes dull and sunken, mucous membranes pale. The under coat had nearly all come out leaving only the stiffer hairs remaining. He was able to stand and walk well, but was very listless. Urine was running in small drops and was strong smelling. The animal carried an odour of ammonia. Manual examination revealed the bladder enormously distended, occupying all the lower half of the abdominal cavity and extending nearly as far as the sternum. At first I suspected the presence of a stone in the bladder but deferred making a diagnosis. I passed a catheter which was quite sterile (I make a point of keeping all catheters in carbolic solution). The operation was very easily performed, and there was no sign of stone or stricture, but the urine did not readily flow. 10¾ oz. were withdrawn, and the bladder was even then not quite empty, what remained being too thick to flow. I washed out the bladder with weak chinosol solution, and gave the dog tr. hyoscyamus and tr. nucis vom. The specific gravity of the urine was 1340 and it contained no tube casts and practically no sugar, but pus cells and a large quantity of vesical epithelium. On examining the prostate it was found to be enlarged and unevenly softer than normal, but caused no great pain; the rectal temp. was 102·1. My diagnosis was atony of the bladder from chronic cystitis and consequent uræmia.

The next day the bladder was once more distended and overflowing, similar treatment was adopted, but later the catheter was discontinued as I was afraid of setting up a worse irritation. The dog gradually lost all appetite, became more and more comatose, and eventtually died on Saturday, the 28th. There had at no time been any marked thirst, and I cannot see any reason for supposing that the dog was suffering from diabetes.

Post-mortem.—The bladder was flaccid and not greatly distended, but was much discoloured and showed numerous small hæmorrhages, the mucous surface showing erosions and small granulations. The contents were viscid and bloodstained, the residue being like the accompanying specimen. Near the urethral opening were several small calculi, two or three of which I have brought as specimens. There were no calculi in the urethra. The prostate is enlarged and contains pus. In places it has become very fibrous, and though I have not as yet cut sections I suspect the presence of melanotic sarcoma. There is a good deal of melanin deposited round the whole gland. The urethra is here much enlarged and is blocked by viscid urine and a kind of ropey albumen, which so far as I can make out consists of degenerated vesical mucous membrane. The kidneys did not show any marked difference from usual; the inguinal glands were much enlarged and the right testicle was lodged in the inguinal ring. I think my diagnosis was reasonable and justifiable, as I do not see how one can be expected to diagnose the presence of pus with an absence of pain, and practically an absence of fever, especially when situated in such a position.

Mr. SINGLETON said that two or three years ago he had a case of a dog whose bladder was completely occluded. On pressing the abdomen he found a hard substance, which he first thought was a tumour. He soon ascertained, however, that the dog could not urinate, and he then decided that there was a stone or ball in the bladder, and advised that the dog should be destroyed. On making a post-mortem examination he found two stones, each a little smaller than a pigeon's egg. The bladder was wholly occluded, and not only so but the wall of the bladder itself was about three-quarters of an inch in thickness. The strange part of the case was that the dog was supposed by the owner to be in perfect health up to three days before he (Mr. Singleton) saw it.

NOMINATION OF FELLOWS.

The following gentlemen were proposed for election as Fellows of the Society:

Mr. RALPH BENNETT, M.R.C.V.S., 15, Eastern Road, Romford.

Mr. PERCY C. WOOLSTON, M.R.C.V.S., Bedford.

DISEASES OF ANIMALS ACTS 1894 TO 1903. SUMMARY OF RETURNS.

Period.		Anthrax.		Foot-and-Mouth Disease.		Glanders (including Farcy)		Rabies. Cases Confirmed.		Sheep Scab.	Swine Fever.	
		Out-breaks	Ani-mals.	Out-breaks	Ani-mals.	Out-breaks	Ani-mals.	Dogs.	Other	Out-breaks	Out-breaks.	Slaughtered *
GT. BRITAIN. Week ended Feb. 11		23	34	..	..	27	46	..	..	62	5	40
Corresponding week in	1904 ..	15	28	..	..	23	55	..	..	86	27	184
	1903 ..	22	36	..	..	29	49	..	..	115	25	106
	1902 ..	22	59	..	..	20	54	..	..	73	30	128
Total for 6 weeks, 1905		128	231	..	..	142	266	..	..	325	63	218
Corresponding period in	1904 ..	124	170	..	..	148	331	..	..	596	168	1044
	1903 ..	99	158	..	..	123	246	..	..	591	169	842
	1902 ..	98	178	..	..	137	299	2	..	532	228	1413
IRELAND. Week ending Feb. 4		..	..	..	..	1	1	..	..	21	..	135
Corresponding Week in	1904 ..	..	..	..	..	..	..	..	..	53	3	73
	1903 ..	..	..	..	..	1	1	..	..	33	..	116
	1902 ..	..	..	..	..	1	4	..	..	34	4	63
Total for 5 weeks, 1905		..	..	..	..	3	5	..	..	96	3	153
Corresponding period in	1904 ..	..	..	..	..	1	1	..	..	162	12	310
	1903 ..	..	..	..	..	1	2	..	..	115	2	150
	1902 ..	..	..	..	..	3	6	..	..	158	16	244

Board of Agriculture and Fisheries, Feb. 14, 1905.

Epizootic Lymphangitis, Week ending Jan. 14, 2 cases.

Department of Agriculture and Technical Instruction for Ireland, (Castle Street), Dublin, Feb. 7, 1905.

NOTE.—The figures for the Current Year are approximate only. * As Diseased or Exposed to Infection.

COMPARATIVE SUMMARY OF RETURNS—
PARASITIC MANGE, IN IRELAND.

	1905	1904	1903	1902
Outbreaks in January	19	18	28	12

SNAKE BITES.

To the Editor of The Times.

Sir,—In an article on "Wild Beasts and Snakes" published in your colums in November last your Correspondent, in referring to local applicatiou of permanganate of potash in the treatment of snake bite as recently re-advocated by Sir Lauder Brunton, Sir Joseph Fayrer, and myself, stated that "it would be vain to count on any very immediate results from an instrument which to be effectual must be promptly used, for the Indians are not prompt."

As two cases have recently been reported to me which afford grounds for a more hopeful view than the above, I would ask leave to very briefly recount them. In both cases, which occurred in separate places, the patients were bitten in the leg by full-sized cobras which were killed and identified, and in each the people in the house at once applied an efficient ligature and sent for the nearest native practitioner, who arrived in 15 and 20 minutes respectively, and incised the two fang marks and rubbed in permanganate of potash crystals, with the result that both patients recovered. One was a native man and the other a native boy of 11 years; and, as a fresh cobra ejects on the average ten times a fatal dose for a man, it is scarcely possible that in both of these cases less than one fatal dose was received by the the patients. In addition to the above, two other cases at the Zoological Gardens, Calcutta, have similarly been treated in former years, immediately after being bitten by a cobra and a Russell's viper respectively, with equally satisfactory results; so that there is no doubt as to the efficiency of the treatment in practice as well as in my experiments. The prompt action of the native patients above mentioned is not exceptional, for they habitually use the ligature as a preliminary to the application of snake stones and other methods of treatment; so that there is good reason for believing that they will successfully use the permangate treatment when a knowledge of it becomes widely known and Sir Lauder Brunton's instrument (which is made by Arnold & Sons, of West Smithfield, London, E.C.) becomes widely distributed in India and elsewhere.—I am, etc.,

LEONARD ROGERS, I.M.S.

Calcutta, Jan. 19.

Death of Donovan.

The famous racehorse and sire Donovan was destroyed at Worksop Manor Stud on Wednesday, February 1st. On Tuesday Donovan dashed into a tree in his paddock, and, besides receiving concussion, broke some small bones in his head. Donovan ran in public for two seasons only, but earned in stakes the large sum of £55,153, only some £2,000 less than the winnings of Isinglass, who, however, did not retire until five years old.

ORIGIN OF THOROUGHBREDS AND ARABS.

To the Editor of The Times.

Sir,—Some time ago you were good enough to publish a letter of mine asking for skulls of pedigree horses for the British Museum. May I hope you will now favour me with space sufficient to make known the special reason for the request?

It was recently discovered that a horse-skull from India in the Museum showed a slight depression in front of the eye, evidently representing the pit for the face-gland (like that of a deer) which existed in the extinct three-toed hipparions, or primitive horses. A similar depression was detected in the skulls of the racers Stockwell and Bend Or, and of an Arab horse. Professor Lankester and myself have to-day ascertained that it exists in the skulls of Eclipse, Orlando, and Hermit. At present we have failed to detect it in those of any of the ordinary English and Continental horses. It appears to be also lacking in horse-skulls from the drift and turbary of Europe. On the other hand, it exists, in a less rudimentary condition, in the fossil true horses of India.

Briefly stated, this face-gland rudiment exists in the skulls of all thoroughbred and Arab horses that have come under our notice, and is absent in those of European horses. The presumption accordingly is that the Arab and the thoroughbred (as has been suggested on other grounds) have an origin quite apart from the horses of Western Europe—presumably from an Eastern form related to the fossil horses of India.

To convert this presumption into a certainty requires a much larger series of pedigree horse-skulls than the Museum now possesses. As the subject is one which ought to interest owners and breeders, it may be hoped that the want may be supplied as opportunity occurs. The inquiry would be much facilitated if the skeletons of all the celebrated horses in London were under one roof (the British Museum). As it is, Eclipse is at the Royal Veterinary College in Red Lion Square, Hermit at the Camden Town branch of the same institution, Orlando at the Royal College of Surgeons, and Napoleon's Marengo at the United Service Club; the British Museum having Stockwell. Could not the governing bodies of the above institutions see their way to transferring their specimens to the national collection, where they would be fully accessible to the public, and of double value and interest on account of their juxtaposition?—I remain, sir, yours obediently,

R. LYDEKKER.

British Museum (Natural History), Cromwell Rd., South Kensington, S.W., Feb. 9.

A SECOND CASE OF CUTANEOUS ANTHRAX SUCCESSFULLY TREATED BY SCLAVO'S SERUM WITHOUT EXCISION.—By ANTHONY BOWLBY, C.M.G. F.R.C.S., Surgeon to and Lecturer on Surgery at St Bartholomew's Hospital; and F. W. ANDREWES, M.D., F.R.C.P., Lecturer on Pathology, St. Bartholomew's Hospital.

A few weeks ago one of us, in conjunction with Mr. C. B. Lockwood, recorded in *The British Medical Journal* a case of anthrax of the face successfully treated at St. Bartholomew's Hospital without excision, by the use of Sclavo's serum. A second and equally successful case has now to be recorded.

On January 17th, 1905, a man, aged 30 years, a horse-hair dresser, presented himself at St. Bartholomew's Hospital with a characteristic anthrax lesion on the forehead. He gave the following history: On January 9th he had fallen, striking his forehead against a fender, bruising it but not breaking the skin. Four days later he noticed some watery fluid exuding from the bruise, and on January 14th, a small black slough was present in the centre of the bruise, which was more defined and evidently inflamed. The neck became a little stiff, and on January 15th an enlarged gland was felt at the left angle of the jaw. His general health was scarcely impaired and there was little pain. On admission to the hospital, under the care of Mr. Bowlby, the patient showed on the left side of the forehead, near the roots of the hair, a black slough about the size of a sixpence with a ring of vesicles around it from which a clear fluid exuded. There was not much inflammation or œdema around, but a large hard gland could be felt at the angle of the jaw. The temperature was 99·6° F., and the pulse 100. The fluid from the vesicles showed numerous characteristic anthrax bacilli, and cultures yielded, next day, a profuse growth of the bacillus practically unmixed with any other organisms. The bacillus was fully virulent when tested upon a mouse. In view of the success which had attended the use of Sclavo's serum in the previous case above referred to, the sole treatment adopted was the injection beneath the skin of the abdomen of 40 c.cm. of the serum, which was kindly furnished by Dr. Legge, of the Home Office. The slough was kept covered by a piece of lint, coated with boracic ointment. No rise of temperature followed the injection, which was given at 4 p.m. on the day of admission (January 17th). During the night the temperature fell to 98·4° F., and thenceforward remained normal. Next day the pulse was 76, and there were no constitutional symptoms; there was less local discomfort, and the gland at the angle of the jaw had diminished in size, but more œdema was present. This œdema still further increased on January 19th, but was never enough to close the eye: it was not associated with any increase in the size of the slough or with the formation of any fresh vesicles; the slough became, however, more prominent from the increased swelling and inflammation. The gland continuously diminished in size from the first. The œdema then grew less, and was gone by January 21st. The patient's convalescence was uninterrupted, and the slough separated on January 31st, fourteen days after the administration of the serum; on this day the man left the hospital with a superficial granulating wound which seemed likely to leave hardly any scar.

A very striking observation was made on the case. We have said that on the patient's admission to the hospital cultivations from the fluid of the vesicles yielded abundant colonies of anthrax bacilli. On the following day, only nineteen hours after the serum had been injected, precisely similar cultures were made, clear fluid being still present in the vesicles. Not a single colony of anthrax could be obtained on this second occasion; only staphylococci grew in the cultures. The cultures were repeated on the third day, again with negative result. The fluid from the vesicles was on this third occasion patiently searched under the microscope; only a very few disintegrating bacilli were found, mostly enclosed in leucocytes. It seems legitimate to infer that the serum exerted a powerfully bactericidal action. It may be suggested that the notable increase in the œdema which occurred after the bacilli had apparently been destroyed, depended upon the liberation of an intracellular toxin from the disintegrated bodies of the bacilli.

We would draw special attention to this increase in the œdema after the use of Sclavo's serum. It was seen to an even more marked degree in the previously reported case, and might easily give rise to the idea that the serum was not doing its work. In the present case, the daily bacteriological examinations helped to allay any undue anxiety on this score, but in both cases the increased œdema was associated with an improvement in all other respects, and was not attended with any new development of vesicles or other indication of an extension of the infective process.

The two cases, taken together, confirm the favourable results which have been obtained in Italy by the use of

Professor Sclavo's serum. They seem to indicate that, at least in moderately early cases of cutaneous anthrax, excision may safely be dispensed with where an initial dose of 40 c.cm. of the serum is employed. So far as we are aware the present case is the second in Great Britain in which reliance has been placed on the serum alone. It has been used in a number of other cases, but always in combination with excision.—*B.M.J.*

SOIL INOCULATION.

An account of the recent experiments in soil inoculation in Germany was given in a previous number of this *Journal* (Sept., 1904, p. 348), and it was stated that the new inoculating material prepared at the agricultural Institute at Munich could be purchased from Professor Hiltner. Dr. Hiltner has now informed the Board that the charge for the supply of pure cultures to persons in the United Kingdom will be two shillings per tube, containing a quantity sufficient to treat the seed required for about three-fifths of an acre in the case of small seeds, such as clover, or in the case of large seeds (peas, lupins, and beans), about half that area. English farmers, therefore, who may wish to obtain a supply of this material should apply direct to Prof. Hiltner, 9 F, Osterwaldstrasse, Munich, Bavaria, stating exactly (1) for what crop the material is required, as the bacteria for each crop are cultivated separately, (2) the area which it is proposed to inoculate, and (3) the date when the culture is intended to be used so that it may reach the applicant as fresh as possible. The application should be made at least a fortnight in advance of this date. The principal crops for which cultures are available are peas (*Pisum sativum*), horse-beans (*Vicia faba*), red clover (*Trifolium pratense*), crimson clover (*T. incarnatum*), lucerne (*Medicago sativa*), and vetches (*Vicia sativa*).

The instructions which are issued with the cultures state that a satisfactory result from the inoculation may be chiefly anticipated on those soils which are almost or entirely devoid of nodule-bacteria, such as newly broken up soil, or newly cultivated moorland, or on soils which contain the bacteria but not in a form suitable for the particular crop which it is proposed to cultivate. Inoculation, however, may be advantageous in other soils, as numerous experiments have shown that it is capable of increasing the number, size, and productivity of the nodules on the roots of leguminous plants.

The cultures are sent out in glass tubes, which should be preserved till use in a dark and not too warm room. The contents of the tube should be turned out with a clean piece of stick either into water, or, better still, into quite fresh milk, care being taken to see that the glass is thoroughly rinsed out with water. The material must be disintegrated in the liquid (about half a pint) with the hands or with a stick, the "agar" (gelatine) being thoroughly crushed with the fingers.

Each tube is accompanied by a nutrient substance in the form of powder consisting of a mixture of pepton and grape sugar, which must be dissolved in the water or milk about half an hour before the bacilli are introduced.

After the bacilli have been well distributed in the nutrient solution the liquid should be poured over the seeds, which should be placed in a vessel of suitable size. In the case of larger quantities the seeds can be heaped up on a well cleansed floor. They should then be thoroughly mixed with the hands or with a shovel, so that each single seed is moistened with the liquid. Should the seeds stick together after being so treated, a little sand or dry earth should be added. The sowing must, whenever possible, take place immediately after the inoculation. When sown broadcast the seed should at once be harrowed in, otherwise the bacilli may be dried up or killed by action of sunlight. For this reason it is strongly recommended that the sowing, when practicable, should be done on a cloudy day, and, in any case, towards evening. Rainy weather is specially favourable for good results.

To increase the chances of success a direct inoculation of the soil, as well as the inoculation of the seed, can be undertaken. The material should be prepared in the same way, and mixed either with earth from the field it is proposed to treat, or with compost, and this should be scattered over the ground and at once harrowed in before the seed is sown. About 5 cwt. of earth should be used to an acre. One tube is enough to inoculate 1 to 2 cwt. of earth.

In order to test the efficiency of the inoculation it is necessary to leave a corresponding plot of land untreated for comparison. This should be separated from the inoculated soil by a strip of at least a yard broad. To prevent any of the bacilli being carried over to the untreated surface, these plots should be sown and harrowed first of all. Implements, drills, etc., that have been employed on the inoculated surface must under no circumstances be used on the plot that that has not been so treated; and to prevent the bacilli being conveyed from one plot to another no one must be allowed to walk across the plots. Care should be taken that the soil does not suffer from want of phosphoric acid or potash. Nitrogenous manuring is generally unnecessary, and in no case should nitrate of soda or sulphate of ammonia be used.

A supply of this material is being obtained from Germany by the Board, and it will be tested at the various Agricultural Colleges and Experimental Farms.—*The Journal of the Board of Agriculture.*

Anthrax—A Woolsorter's Death.

Mr. E. H. Hill (District Coroner) conducted an inquiry on Wednesday, 25th ult., at Sir Titus Salt's Hospital, Saltaire, relative to the death, which took place on Sunday, 22nd ult., of Stephen Moseley, 38, woolsorter, of 6 Shirley Street, Saltaire. The deceased, who had been employed at the Saltaire Mills, died under circumstances which had given rise to suspicions of anthrax. Mr. H. M. Dawson appeared in the interests of the deceased's widow, and Mr. W. H. Seal (His Majesty's Inspector of Factories) was also present.

Ellen Moseley, the widow, stated that her husband had always enjoyed very good health. On Monday week he commenced to be ill, complaining of feeling cold and shivering. She thought he was suffering from influenza. He had to leave work at half-past three o'clock the same afternoon, and was not able to return. He finally took to his bed on Thursday, the doctor having to be called in on the preceding day, and death took place on Sunday afternoon.—In reply to Mr. Dawson the witness said that her husband did not say anything to her about the class of wool he had been engaged in sorting.

Dr. John Emerson, of Daisy Place, Saltaire, who attended the deceased from the Wednesday until his death, said he formed the opinion that the man was suffering from an attack of influenza and treated him accordingly. On the morning he died, however, the deceased's condition gave rise to the suspicion that something else was wrong with him. Dr. Bell was called in for consultation, but he did not arrive until after death had taken place. The witness did not know what occupation the deceased followed until that morning, but as soon as he heard that he was a woolsorter he suspected anthrax. He afterwards made a post-mortem examination in the presence of Dr. Bell, who concurred with the results he arrived at. The hands, ears, and neck were found to

be much discoloured. There was about a pint of clear fluid in the pleura. The lungs were filled with dark-coloured blood, but were not diseased. He had since microscopically examined a quantity of blood and serum taken from the body, and found in them anthrax bacilli in considerable numbers. The presence of these germs was confirmed by both Dr. Bell and Dr. Eurich. Although there were no local manifestations of the disease, the witness was thoroughly satisfied that death had resulted from woolsorter's disease, which was the pulmonary form of anthrax.

In reply to the Coroner the witness explained that the germ could be drawn into the lungs even though the latter might be in a healthy condition. A slight abrasion in the throat, or in the nostrils, might serve as a passage for the germs to enter the lungs.

William Hartley, of 7 Albert Road, Saltaire, stated that he was the foreman woolsorter at the Saltaire Mills. From December 23rd of last year until the 16th January, the deceased was employed in dealing with alpaca. His work consisted in looking over wool which had been opened and twice sorted. All the sorting was done on a proper sorting board, provided with a fan having a strong downward draught. The deceased had worked at the Saltaire Mills since he was seven years of age—a period of thirty-one years—and was apprenticed to sorting. The work he did was really the least risky of any connected with sorting. It was twenty-one years since a case of anthrax had occurred to a woolsorter at their works. Eight years ago a warehouseman was attacked by the disease.

By Mr. Seal: Alpaca was recognised as one of the scheduled dangerous wools in connection with which the Home Office had issued special regulations. Copies of the regulations were hung up in the works and were strictly enforced.

Mr. Seal here interpolated that the firm had done everything that was possible to make the work of wool-sorting innocuous. He had never known one of the regulations to be violated.

The witness stated, in reply to further questions, that the deceased never ate his meals on the premises, but always went home to them. He was very cleanly in his habits, and took advantage of the lavatory and clothes-hanging accommodation provided and fulfilled all the other obligations laid down by the regulations.

The Coroner, in summing up, said there could be no doubt that the cause of death was anthrax, contracted whilst the deceased was following his employment, and if the jury were satisfied that the firm had taken every precaution possible to prevent the disease from being contracted they would, of course, come to the conclusion that the man's death was an accident. Human ingenuity had not yet been able to devise a means whereby these deadly germs could be rendered entirely harmless.

The jury returned a verdict of "Accidental death."

A juryman asked if Mr. Seal could suggest anything which would tend to further safeguard the health of those engaged in dealing with dangerous kinds of wool.

Mr. Seal replied that a list of suggested improvements to the special regulations applying to wool-sorting had been drawn up by a committee representative of both employers and employed, and was at present under consideration by the Home Office. As to the Saltaire Mills he had systematically visited the sorting department there and was convinced that very successful endeavours were being made to render the work safe. The down draught, for instance, was double what was stipulated for in the rules. Mr. Seal proceeded to call attention to the serum which has been discovered by an Italian doctor, who claims that it is a cure for anthrax. Some of this serum, he explained, was now in the hands of able doctors at the Bradford Royal Infirmary, who would be glad to test its efficacy whenever necessary. It was just possible that had the deceased's case been diagnosed as one of anthrax earlier, his life might have been saved by means of this new discovery.

Mr. James Roberts, the head of the firm of Sir Titus Salt, Bart., Sons and Co. (Limited), who was present throughout the proceedings, expressed sorrow with the deceased's relatives, and spoke in eulogistic terms of the deceased, who, he said, was one of their best and most highly respected workmen.—*Bradford Observer.*

The Bishops and the Doctor.

A correspondent of *The Record* states that his family doctor having asserted that "not a single bishop on the Bench to-day believes in the miraculous in religion," he wrote to all the bishops asking whether the statement was true. The unanimity of bishops when they do agree is wonderful, and they hastened to repudiate the want of faith attributed to them. The question of episcopal belief does not, of course, concern us here. But we note that one or two of the right reverend fathers in God were so much carried away by virtuous indignation as to suggest that the medical inspirer of the question is professionally incompetent. Thus the Bishop of Chichester advises his correspondent at once to change his family doctor, "for," he adds, "if this gentleman is capable of putting such pernicious and harmful statements into your *head*, I tremble to think what unauthorised concoctions he might not introduce into other parts of your astonished body." It is plain that his lordship would be glad, if he dared, to hurl at the head of the presumptuous doctor all the curses of the Athanasian Creed. Such an anathema would, at any rate, leave the victim not a penny the worse. But the Bishop, being unable to curse openly, does his best to injure the object of his wrath both in his professional character and his material interests. He is of course free to advise any one who will listen to his admonition to change his doctor. It is, however, going beyond the bounds even of ecclesiastical anger to suggest that a medical practitioner is likely to introduce "unauthorized concoctions" into a patient's body. What, by the way, are "unauthorised concoctions"? We do not know: neither, we suspect, does the bishop. But the words have a sound suggestive of heresy and recalcitrancy, and therefore come readily to clerical lips. By those, however, who accept such deliverances as authoritative, they may easily be taken as conveying a charge of quackery. Another bishop is good enough to express the hope that the family doctor is better informed on matters that concern his own profession than he is as to the attitude of the bishops towards the miraculous. We hope the clergy of all sects and denominations will take unto themselves the lesson implied in these episcopal utterances. They are fond of dabbling in physic, and as a class they are often patrons and sometimes prophets of quackery. Let them reflect seriously how little meddling with matters which they do not understand can help to make their teaching on their own proper subjects acceptable to persons of intelligence.—*B.M.J.*

Accident to Mr. S. Bignold

A brilliant 20 miles run with Sir Robert Wilmot's Staghounds took place on Friday last, when the meet was at Hurst Pond, Berkshire. There was a large field out, and the quarry took its followers over the biggest part of their country. Falls were plentiful and included a serious one to Mr. Samuel Bignold, of Rendham, Saxmundham, and Lillie Bridge, London, whose accident was caused by jumping some hidden wire, breaking and dislocating his collar bone, besides other injuries. He was afterwards conveyed to his London residence by special train.

Personal.

GIRLING—LEA.—On the 11th Jan., at St. Luke's Church, Pembina Crossing, Manitoba, by the Rev. Thos. H. Walton, M.A., Theodore A. Girling, V.S., of Saskatoon, N.W.T., younger son of Rev. W. H. Girling, Rector of Wilshaw, nr. Huddersfield, Yorkshire, to Dora Simcox, fourth daughter of Richard N. Lea, of Fairbrook, Pembina Crossing, Manitoba.

OBITUARY.

JOHN REYNOLDS, M.R.C.V.S., Clarges St., London, W.
Graduated, Lond: March, 1874.

The sudden death of Mr. Reynolds from an accident on the 10th inst., gave quite a shock to the London practitioners who heard of it. The report of the inquest contains all the facts.

An inquest was held by Mr. R. H. Wellington, deputy coroner, at Westminster, into the death of John Reynolds, aged 52, a veterinary surgeon, of Clarges St., Piccadilly.

George Goodman gave evidence that about three o'clock on Friday afternoon he was driving with Mr. Reynolds in a light trap, drawn by a pony. Just as they were entering Birdcage Walk from Queen Anne's Gate, the pony bolted, taking fright at a motor car. Mr. Reynolds had almost succeeded in pulling it up when another motor car passed, and it broke into a gallop again. They dashed along Birdcage Walk and a wheel of the trap collided with a van. Both he and Mr. Reynolds were pitched out. He himself was not much hurt, but Mr. Reynolds was unconscious, and was conveyed to Westminster Hospital.

Medical evidence showed that Mr. Reynolds died two hours after his admission to the hospital from the effects of a fractured skull.

The jury returned a verdict of accidental death.

Mr. Reynolds graduated from the London School in 1874 and has practised in Mayfair ever since. He was assistant to the late Mr. John Roalfe Cox, and carried on his extensive practice during the two years in which Mr. Cox was invalided. He was a sound practitioner and a genial companion. Although he never took any prominent part in veterinary science or politics he quietly kept himself up to date, and gained the esteem and friendship of all his clients.

The funeral took place at Kensal Green on Wednesday last.

Mr. Reynolds had reached his 52nd year, and leaves a widow but no family.

JOHN HOBDAY, M.R.C.V.S., R.S.S.
Lond: Dec., 1903.

All who knew him as a student and as a practitioner will regret the early termination of the career of John Hobday. His unselfish life and enthusiasm for his professional work had gained him a large circle of sincere friends. Matriculating at the Manchester Grammar School he entered the Royal (Dick) Veterinary College in Edinburgh where, during his first year, he took the silver medal in chemistry, and the bronze medals in practical chemistry, zoology, and botany respectively. Unfortunately during his later studies in London his health gave way, and for two years he had by medical advice to relinquish brain work. During this time he took up practical farriery and gained the certificate of the Farriers' Company as doorman and fireman, returning to the London Veterinary College in 1901, and obtaining his diploma in 1903. His health, however, never completely recovered, and he had hoped to have improved it by a stay in Canada, for which country he would have sailed in a few days' time. His death unexpectedly and suddenly occurred on the 11th inst.

CORRESPONDENCE.

METHOD AND RESULT.

Sir,

I suppose, reasoning from analogy, that the successful results of the cases reported by Bryant and Gamgee were because their patients "were operated upon in filthy surroundings away from the situation of well trained or highly developed virus."

Ovariotomy in the sow has been frequent in the past, but why mention the sow and bitch in the same sentence. The one is done for profit and often, the other not nearly so often, and frequently of necessity. The peritoneum of the one is far less affected by wounds than the other. One is twice as active as the other and has hair on its body, whilst the body of the other is practically hairless.

Of course the publication of the country practitioner's abdominal operations is not done to advertise his skill. The country practitioner is simple and guileless. "Enquirer" says so, so it must be right. The inference is that the man who records most cases is an advertiser, the man who records an occasional one is not. This is a subtle distinction between the two classes of men. Registration Committee please note, how to detect an advertiser. I should say the more recorded cases the better for science.

The conclusion to be drawn with regard to pre-antiseptic days and now is that in pre-antiseptic days a few abdominal organs were occasionally removed with success. The successes were probably reported but not the failures. To-day double the number of patients, both human and canine, are operated on and recorded deaths from inflammation of the bowels are not so frequent. There is more fullness and frankness in the records.

The four instances of *the same case* reported by "Enquirer" are pure romance, worthy of the days of Cervantes. How old was that dog that was the subject of *the same case* with the "dog fancier and kennel man" right up to the "modern practitioner." Who was the owner of the dog, and how can anybody verify the case?—Yours truly,

"OMNIA MUTANTUR."

SOLICITING ANOTHER'S CLIENTS.

Sir,

Would you be so so good as to allow me through the medium of *The Record* to ask some of your numerous subscribers what course to adopt towards a member of the profession who, taking advantage of your being a new-comer in a district, solicits the clients, by personal interview and by letter, of the practice you have only recently purchased at considerable expense? Can the nuisance be put an end to—the conduct, of course, I mean.—Yours truly,

PERCY D. LANGLEY.

Otley.

PARALYSIS IN CALVES.

Sir,

I have on several occasions, about this time of the year, been called in to see some calves ranging from three to nine months, which the attendant invariably finds unable to get up, and when assisted their limbs are absolutely useless. Some will recover after treating the symptoms, but I cannot discover the cause. Perhaps someone more experienced will be kind enough to enlighten me on the cause and treatment.—Yours faithfully,

YOUNG PRACTITIONER.

COMMUNICATIONS AND PAPERS RECEIVED.—Messrs. J. H. Parker, W. H. Dalrymple, P. D. Langley, F. Hobday, F. E. P., "Omnia Mutantur."

Abstracts and Reports in Veterinary Physiology and Pharmacology, Laboratory N.Y. State Coll., Ithaca, P. A. Fish. *Market Drayton Advertiser*, *The Times of India*.